

AMENDMENTS TO THE CLAIMS

Please amend the claims as set forth below in marked-up form.

1. (Currently Amended) A solid-state image pickup device comprising:
a pixel portion in which unit pixels are arranged in a matrix form;
horizontal signal lines of plural rows which are wired to said pixel portion on a row basis;
plural vertical signal lines which are wired commonly to said horizontal signal lines of plural rows;
vertical driving means of plural systems which select the respective pixels of said pixel portion every row over plural different rows, making the accumulation time of signal charges of each pixel of the plural selected rows different among the plural rows, and successively outputting to said plural vertical signal lines the signals which are output from the respective pixels to said horizontal signal lines of plural rows; and
horizontal driving means for successively selecting the pixels of plural rows which are selected by said plural systems of vertical driving means; wherein
each of said unit pixels comprises a read out transistor and an output selection transistor; and
said horizontal driving means feeds a horizontal selection pulse to said read out selection transistor and said output selection transistor.

2. (Original) The solid-state image pickup device as claimed in claim 1, wherein said vertical driving means of plural systems has vertical selection switches of plural systems which are connected between each of said horizontal signal lines of plural rows and said plural vertical signal lines, and plural vertical scan circuits which are provided in connection with said vertical selection switches of plural systems and successively drive said vertical selection switches of different rows by a vertical scan operation.

3. (Currently Amended) A method of driving a solid-state image pickup device comprising a pixel portion in which unit pixels comprising a read out selection transistor and an

output selection transistor are arranged in a matrix form, horizontal signal lines of plural rows which are wired to the pixel portion on a row basis, and plural vertical signal lines which are wired commonly to the horizontal signal lines of plural rows, characterized by the steps of:

selecting the respective pixels of the pixel portion every row over plural different rows;

making the accumulation time of signal charges of each pixel of the plural selected rows different among the plural rows;

successively selecting the respective pixels of plural rows thus selected and outputting the signal of each pixel to the corresponding one of the horizontal signal lines of plural rows; ~~and~~

outputting through the plural vertical signal lines the signals which are output from the respective pixels to the horizontal signal lines; and

feeding a horizontal selection pulse to said read out selection transistor and said output selection transistor.

4. (Currently Amended) A camera system using as an image pickup device a solid-state image pickup device ~~a~~ wherein said solid-state image pickup device comprising comprises:

a pixel portion in which unit pixels are arranged in a matrix form;

horizontal signal lines of plural rows which are wired to said pixel portion on a row basis;

plural vertical signal lines which are wired commonly to said horizontal signal lines of plural rows;

vertical driving means of plural systems which select the respective pixels of said pixel portion every row over plural different rows, making the accumulation time of signal charges of each pixel of the plural selected rows different among the plural rows, and successively outputting to said plural systems of vertical driving means the signals which are output from the respective pixels to said horizontal signal lines of plural rows; and

horizontal driving means for successively selecting the pixels of plural rows which are selected by said plural systems of vertical driving means; wherein

each of said unit pixels comprises a read out selection transistor and an output selection transistor; and

said horizontal driving means feeds a horizontal selection pulse to said read out selection transistor and said output selection transistor.

5. (Original) The camera system as claimed in claim 4, further comprising a signal processing circuit containing delay means for making signals of plural different rows output from said solid-state image pickup device simultaneous with one another, and processing means for processing the signals of plural rows which are made simultaneous with one another by said delay means.

6. (Currently Amended) A solid-state image pickup device comprising:
a pixel portion in which unit pixels are arranged in a matrix form;
horizontal signal lines of plural rows which are wired to said pixel portion on a row basis;
a vertical line which is wired commonly to said horizontal signal lines of plural rows;
vertical driving means for selecting the pixels of said pixel portion wired to the respective row of said horizontal signal line; and

horizontal driving means for selecting the pixel of the row selected by said vertical driving means; wherein

each of said unit pixels comprises a photoelectric converter, a read-out transistor for reading out a signal charge, accumulated by said photoelectric converter, into a storage unit, a read-out selection transistor for selecting the reading out of the signal charge by said read-out transistor, an amplifying transistor for converting the signal charge stored in said storage unit into an electrical signal and for outputting the electrical signal as a pixel signal, a reset transistor for resetting the storage unit, and an output selection transistor for selecting the output of the pixel signal provided by said amplifying transistor;

said vertical driving means successively outputs the pixel signals to said vertical line via said horizontal signal line; and

said horizontal driving means feeds a horizontal selection pulse to said read out selection transistor and said output selection transistor.

7. (Canceled)

8. (Currently Amended) A solid-state image pickup device as claimed in claim 7~~1~~, wherein said horizontal selection pulse also serves as a reset pulse for an adjacent column of said unit pixels.

9. (Original) A solid-state image pickup device as claimed in claim 6, wherein said unit pixel outputs a reset level by said reset transistor during a reset operation and a signal level based on the signal charge photoelectrically converted by said photoelectric converter.

10. (Original) A solid-state image pickup device as claimed in claim 6, the device further comprises a circuit for determining a difference between the reset level and the signal level.

11. (Original) A solid-state image pickup device as claimed in claim 10, wherein said circuit is a correlated double sampling circuit.

12. (Original) A solid-state image pickup device as claimed in claim 6, the device further comprises means for outputting signals of different accumulation time periods.

13. (Currently Amended) A method for driving a solid-state image pickup device comprising:

a pixel portion having a matrix of unit pixels, each unit pixel comprises a photoelectric converter, a read out transistor for reading out a signal charge, accumulated by said photoelectric converter, into a storage unit, a read out selection transistor for selecting the reading out of the signal charge by said read out transistor, an amplifying transistor for converting the signal charge stored in said storage unit into an electrical signal and for outputting the electrical signal as a pixel signal, a reset transistor for resetting said storage unit, and an output selection transistor for selecting the output of the pixel signal provided by said amplifying transistor,

horizontal signal lines of plural rows which are wired to said pixel portion on a row basis,

a vertical line which is wired commonly to said horizontal signal lines of plural rows,
vertical driving means for selecting the pixels of said pixel portion wired to the respective row of said horizontal signal line, and

horizontal driving means for selecting the pixel of the row selected by said vertical driving means, the method comprising the steps of:

resetting a storage unit by a reset transistor;

outputting a reset level of said reset transistor to a horizontal signal line through an amplifying transistor;

reading out the signal charge of the photoelectric converter into said storage unit;

outputting a signal level based on the signal charge to said horizontal signal line through said amplifying transistor; and

outputting the reset level and the signal level to a vertical line through said horizontal signal line sequentially; and

feeding a horizontal selection pulse from said horizontal driving means to said read out selection transistor and said output selection transistor.

14. (New) A solid-state image pickup device as claimed in claim 6, wherein said horizontal selection pulse also serves as a reset pulse for an adjacent column of said unit pixels.